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PROGRESS REPORT FOR 1992 ON SPECIFIC UNIDO ACTIVITIES

Submitted by the Director-General

Addendum

UNIDO energy programme

Summary

Comprises an input to the progress report for 1992 on specific UNIDO activities (IDB.10/18), concerning the UNIDO energy programme, taking into account the comments made by the Member States at the ninth session of the Board and the relevant recommendations of the United Nations Conference on Environment and Development.

Introduction

1. As requested in a decision by the Board at its ninth session (IDB.9/Dec.3) the present document is a progress report of activities undertaken by the UNIDO energy programmme during the period May to August 1992, taking into account the comments made by the Member States at that session as well as the relevant recommendations of the United Nations Conference on Environment and Development (UNCED), 3 to 14 June 1992. The present addendum should be considered a part of the progress report for 1992 on specific UNIDO activities (IDB.10/18).

A. Country energy programmes

2. Africa: At the request of the countries of the Southern African Development Coordination Conference (SADCC), a comprehensive study was carried out for the subregion to develop renewable and non-renewable sources of energy taking into account the impact of industrialization on the environment. In 1991, UNIDO had completed a large-scale project in Angola for a Regional Petroleum Training Centre for SADCC countries, funded by the United Nations Development Programme (UNDP), the Norwegian Agency for International Development (NORAD) and Italian aid programmes. Since the energy problems of individual African countries varied widely it was decided that a second phase of the activity should be planned to deal with specific country needs at both national and regional levels. The approach considered was to identify and evaluate the specific needs of the member countries and identify projects which could be grouped into regional programmes. At a national level, following ongoing discussions, the activities will address specific country problems, develop a programme in consultation with local institutions and counterparts and within this programme, identify projects for execution.

3. Fossil fuel resources of some developing countries, such as coal, gas and oil, are not utilized effectively because of a lack of technological knowledge or the absence of infrastructure to process and distribute the resources at a reasonable price. In addition, senior officials making the energy policy decisions often are unaware of the various options available to develop and utilize fossil fuel resources. At the request of several African countries, UNIDO is currently undertaking the development of programmes to identify, classify and prioritize energy-related activities on a country/regional basis. The programmes are in line with the policies of UNIDO to assist developing countries to initiate programmes to better utilize existing resources and identify and apply alternate technology for use in the development process as well as effectively implement these programmes. They will also target the reduction of deforestation in this region and the integration of women into the programmes through education and training in the use of alternate fuels such as charcoal, and improved cooking methods through, for example, better

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designed stoves. The projects are representative of activities where a small investment under the Industrial Development Decade for Africa can lead to a major project with international financial support. It will involve 14 African countries and assist with both social and economic development of the area as well as energy-efficient industrialization.

4. The results of several missions and the studies of three experts relating to the needs in the energy sector of each member country of SADCC were finalized in conjunction with a final report prepared in August. Items addressed included the sources of energy, the specific energy needs, and the results of training programmes to enhance and introduce efficient forms of energy in each country.

5. The anticipated result will include the formulation of national and regional programmes for consideration at the biennnial SADCC Ministers meeting scheduled for November this year. The programmes cover gas, petroleum, coal, charcoal, new and renewable energy, biomass, and energy conservation and efficiency. The annual cost of the programmes is estimated to be $3 to $4 million. As evidence of the multilateral interest in the programme, requests for copies of the final programming report have come from UNDP, NORAD, the Italian aid programme and the Government of Canada. The Canadian International Development Agency has recently approved funding assistance for the needs assessment and UNDP, NORAD, and Italian aid programme are also considering providing financial assistance.

6. United Republic of Tanzania: During a mission in July 1992, discussions took place with the Minister of Energy and Mining for the United Republic of Tanzania, resulting in a programme concept for the better utilization of high sulphur coal and improved electricity supply for industry as well as on deforestation issues. The programme, now in the planning stage, will have local as well as regional implications for Africa where deforestation is a widespread problem. It will address actions necessary to replace the use of high value wood with cheaper, quick-growing wood; to improve the efficiency of wood use with better stoves; to identify and develop alternatives to wood use domestically on a long-term basis.

7. China: An adviser on energy matters to UNIDO, on loan from the United States Department of Energy for the last 18 months, completed an energy programme in May 1992 for China on coal utilization which included two projects where UNIDO will provide technical expertise. The coal utilization programme was the first energy programme prepared by UNDP at the country level, and was approved in June 1992 with technical support from UNIDO. The projects in which UNIDO will participate will involve providing technical assistance to industry to ensure that the steam and power generated from coal for industrial production is undertaken on environmentally sound lines and to minimize energy costs. During the mission in May, high-level meetings were held with UNDP and a number of specialized centres and research institutes in China as well as relevant government departments and international technical bodies. The discussions enabled finalization of project documents on coal utilization and energy conservation - areas where UNIDO could contribute.

8. India: A project to study the feasibility of establishing a lignite mine and power generation facility was drafted during the reporting period to support activities of the Tamil Nadu Industrial Development Corporation Limited of India. The project is being developed for bilateral funding support.

B. Inter-agency cooperation

9. UNIDO, in cooperation with the International Atomic Energy Agency (IAEA), International Institute for Applied Systems Analysis (IIASA), and Organization of Oil Exporting Countries (OPEC), - the "Vienna Four" - has prepared and submitted a paper to the World Energy Council (WEC) for presentation at the next WEC conference at Madrid, Spain, in September 1992. The paper, "Energy in the 21st century, new challenges and goals", is to be reviewed at the conference. A major part of the paper covering technology transfer and the economics and financing of new technologies was contributed by UNIDO. In addition, UNIDO coordinated and submitted the combined paper. The "Vienna Four" are undertaking informal reviews of UNCED-related documents including the Framework Convention on Climate Change, Agenda 21, and the two global energy efficiency programmes by the Economic Commission for Europe. The aim of the reviews is to identify activities and a possible role for the "Vienna Four", with regard to the outcome of UNCED.

10. As part of its activities with the "Vienna Four", UNIDO has been participating jointly with IAEA as of May 1992 in developing a technology assessment database. The environmental- and health-related impacts of different energy systems, particularly those associated with the production of electricity, are emerging as significant issues for the coming decades, including the effects of pollution on health, environmental damages due to acidification of forests and lakes, and the risks of global climate change induced by increasing atmospheric concentrations of carbon dioxide and other greenhouse gases. These, together with the emerging needs of many countries to define their energy programmes, have provided the basis for a growing interest in the application of improved data, tools and techniques for comparative assessment of different electricity generating systems, particularly from an environmental and human health viewpoint.

11. UNIDO participated in a workshop convened by IAEA on "Database for health and environmental impacts of various energy systems", from 31 August to 4 September 1992. It served as the first meeting of the coordinating expert group on databases. The Technical Committee Meeting (TCM) of IAEA, which will draw upon the work of participating organizations, had as its objective an agreement on the structure and content of the databases to be developed within the joint project. The TCM was able to set out a proposed basis for furthering the work of the expert group on databases. UNIDO will follow the activities and results of the database development for inclusion in its technical assistance activities with developing countries as appropriate.

C. Ongoing energy-related projects

12. For some years now, UNIDO has undertaken major promotional information activities with regard to new and non-polluting energy technologies based on solar, hydrogen and hydropower. The main activity in the area of solar energy has been through the Consultative Group for Solar Energy Research and Application

(COSERA), a forum for solar energy research with the support of the donor community. This has been augmented by an ongoing proposal to establish centres of application for solar energy (CASE), aimed at bridging the gap between research and development and the market place. Similarly, in the field of small hydropower plants the promotional work of UNIDO has concentrated on international cooperation through the establishment of networks and information exchange. More recently, with the growing importance of environmental considerations, the subject of energy production from hydrogen has been highlighted through studies, expert group meetings and a proposal to establish an information centre. Within the framework of the UNIDO Industrial and Technological Information Bank (INTIB) a referral database on energy and environment has been established.

13. In the area of new and renewable energy sources, an expert in solar thermal and photovoltaics was fielded in April 1992 to assess the possibilities of transferring related technologies for the local manufacture of solar water heaters and the assembly of photovoltaic panels to Damascus, Syrian Arab Republic, in conjunction with a project in which UNIDO and the Arab School of Science and Technology jointly hosted a workshop in February this year on composites and advanced materials. Based on the findings of the workshop and mission, a report has been completed and follow-up activities are being initiated, including a regional project for Arab countries.

14. Under a project for technical assistance in laboratory tests to adopt wind generator technology for battery charging to pilot production, an expert was fielded during the reporting period to assist in establishing the manufacturing process. He also assessed the possibilities of application of solar energy and biomass in Mongolia, as well as potential projects dealing with upgrading/rehabilitation of plants in the electric subsector.

15. Under a regional programme for the establishment of small hydropower plants in Africa, questionnaires have been sent during the reporting period to project counterparts in the seven countries involved in the project. After evaluation of the responses, the subcontractor will undertake two missions to determine the present status of site selection for the envisioned small hydropower plants.

16. A number of UNIDO technical assistance projects in Madagascar and Sudan have been exploring the possibility of utilizing agricultural residues to produce charcoal. After examining the technical, economic, marketing and commercial aspects of introducing such technology, indications are that the introduction of the technology would be feasible, and in the case of Madagascar several bankable propositions were identified. However, further assistance would be required for their implementation. Projects are currently being developed to seek such assistance, with the emphasis on enhancing management capability for the proposed plants, and also to allow the technology to be examined for feasibility at other sites. Successful introduction of such technology would help to relieve pressure on valuable forest resources currently being used for firewood, and so help to reduce the rate of deforestation. Projects now in the planning stage include preparation of a brochure on producing charcoal briquettes from cotton stalks for dissemination to other countries where the technology may be applicable, further assistance with the development of technology for charcoal briquetting and assistance with commercializing the process.

17. In the area of biogas production from industrial wastes, two projects are under way to build demonstration pilot plants in China and Zimbabwe, one for treating distillery waste and the other for food-processing waste. The pilot plants will be operational in 1993, and will be used to promote the technology on a regional basis. It is hoped that the two projects will point the way to a larger programme in biogas technology. To further aid programme development a major regional study is currently being developed to investigate barriers limiting the application of the technology and the means to overcome them. The holding of an international workshop is being considered.

18. During the reporting period UNIDO completed a European regional project to establish an energy conservation network of participating institutions which is now capable of providing information, training and consultancy services. During the life of the project a concept of a mobile diagnostic unit for conducting energy auditing tailored for local demand has been developed and six "energy auditing buses" have been put into operation. More than 100 specialists have been trained in three training centres established by the project. Detailed energy audits have been carried out mainly in building materials, food processing and the iron and steel industries which resulted in the implementation of low-cost energy efficiency improvement measures. An information system with relevant sectoral databases was installed during the reporting period in the countries of the project.

19. A project of industrial energy management consultancy and training for the Philippines is near completion, including the establishment of an analysis group for carrying out economic evaluations and feasibility studies on energy conservation projects as well as a study on locally available financing schemes and programmes offered by certain banking institutions. A fuel and appliances testing laboratory was fully operational as of April 1992 for testing air conditioners and refrigerators. Plans are completed for certification testing of the energy efficiency of fans and air conditioners as well as for a programme to label the equipment with energy-efficiency markings and to launch a public awareness campaign. Two manuals, one on energy efficiency in the food-processing industry and the other on consultancy services in energy conservation, were ready for distribution by the middle of 1992. They are based on the experience of Central and East European countries.

20. Several projects are in the formulation stage for seminars on energy technologies for UNIDO staff members. These will provide in-house information on advanced technology systems and methodologies for improving the efficiency and environmental cleanliness in industry.

ACTION REQUIRED OF THE BOARD

21. The Board may wish to take note of the present progress report.